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09/989,685	11/21/2001	Yusuke Suzuki	043118-0104	9720

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FOLEY AND LARDNER
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
LAM, ANDREW H	
ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/989,685	SUZUKI ET AL.	
	Examiner	Art Unit	
	Andrew H. Lam	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-34 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-34 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 08 March 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 11/21/01.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

Claim 10 is objected to because of the following informalities: Claim 10 states "The printing system as set forth in claim 1". Claim 1 is "A distributed printing system". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-5 and 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vatland et al (U.S. Patent No. 5,577,172) hereinafter Vatland in view of Mastie et al (U.S. Patent No. 6,373,585) hereinafter Mastie.

Regarding claim 1, Vatland discloses a distributed printing system (fig. 4, is a block diagram of a distributed printing system) comprising: a print client (fig. 4, computer system 70) for creating PDL data based on a print request of a user (fig. 4, PDL generation 98, is used to create PDL data); a printer controller (fig. 4, print server 82) for delivering raster data, which is created by subjecting the PDL data created by said print client to raster image processing, to a printer engine so as to be printed thereby (col. 7, lines 39-45, print server 82 is provided to receive a document represented by a series of PDL instructions from a computer system not coupled to raster network bus 68, such as computer system 70, or simply to off-load RIP processing from another computer system. Routing module 150 is provided to route printing jobs to a selected printer).

Vatland does not disclose expressly a RIP distribution control means capable of making the raster image processing distributed among and performed by said print client and said printer controller.

Mastie discloses a printer manager having a print queue for distributing PDL to printer controllers for converting the PDL into RIP (see fig. 1). Also, when it is determine that a printer controller is available for converting a PDL into RIP the PDL is sent to that available printer controller from the print queue (col. 8, lines 19-20).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Vatland teaching as per teachings of Mastie because of the following reason: by having a print manage with a print queue for holding PDL to be distributed to an available printer controllers (any device that can convert PDL to RIP

i.e. print controller or client) would help optimize RIPper utilization thereby speeding up print time (col. 8, lines 26-27).

Regarding claim 2, the combination of Vatland and Mastie discloses the distributed printing system as set forth in claim 1, characterized in that said RIP distribution control means (fig. 1, printer manage 6) distributes the raster image processing based on an amount of accumulation of the PDL data waiting for the raster image processing (Mastie, fig. 4 is a GUI that shows the user the PDL that is accumulated in the print manager queue and which PDL is being RIP and which PDL is waiting to be RIP).

Regarding claim 3, the combination of Vatland and Mastie discloses the distributed printing system as set forth in claim 2, characterized in that said RIP distribution control means determines the amount of accumulation of said PDL data based on PDL feature data corresponding to an amount of raster image processing of said PDL data (Mastie, fig. 2 illustrates how a PDL should be RIPed that is it contains a parameter field 26 indicating various RIP parameters for generating the RIPed files, including fonts, resolution, image compression type and page segment, col. 5, lines 57-60).

Regarding claim 4, the combination of Vatland and Mastie discloses the distributed printing system as set forth in claim 1, characterized in that said RIP distribution control means distributes the raster image processing based on RIP host data which is data related to the processing performance of said print client (Mastie, col.

6, lines 29-31, the enabled filed 32 allows the user to specify how much of the printer controller processing cycles are dedicated to RIPping operation).

Regarding claim 5, the combination of Vatland and Mastie disclose the distributed printing system as set forth in claim 4, characterized in that said processing performance includes at least one of a raster image processing speed (Mastie, col. 6, lines 29-38, the enabled field 32 allows the user to specify how much of the printer controller processing cycles are dedicated to RIPping operation or alternatively to maximize RIP processing the user enable RIPPer use maximize all processor cycles), a memory capacity, and a data transmission time.

Claims 6-17 and 23-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Vatland and Mastie in view of Schwartz (U.S. Patent No. 6,891,632).

Regarding claim 6, the combination of Vatland and Mastie disclose the distributed printing system as set forth in claim 1, characterized in that said RIP distribution control means comprises RIP function parts arranged in said printer controller and said print client (Mastie, fig. 1, print manager 6).

The combination does not disclose expressly that the RIP host selection control means arranged in said printer controller for determining, upon receipt of a notification of transmission of PDL data from said print client, whether an amount of accumulation of PDL data waiting for raster image processing when the PDL data to be transmitted from said print client is received becomes equal to or greater than a prescribed threshold, and for issuing an instruction such that said print client performs raster image

processing of said PDL data by using its own RIP function part when the amount of accumulation of PDL data waiting for raster image processing becomes equal to or greater than said threshold.

Schwartz discloses a print driver that can perform analysis on the PDL. For example if (a) the size of the PDL output is larger than it would be to send a fully rasterized page image, and (b) there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host (col. 8, lines 39-41).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the combination of Vatland and Mastie teaching in view of Schwartz because of the following reason: by using a print driver to do analysis on the PDL, to see the trade off for rasterizing the PDL at the client or the host, would reduce print time because it would reduce the amount of data to be transferred and it would utilize the fastest processor to do the rasterization (col. 8, lines 42-47).

Regarding claim 7, the combination of Vatland, Mastie and Schwartz discloses the distributed printing system as set forth in claim 6, characterized in that a plurality of print client members (Vatland, fig. 4, computer system 70 and 72) are arranged as said print client; and said RIP host selection control means comprises: an RIP host data part (Mastie, printer manager 6, col. 8, lines 40-41, the printer manager transmit the RIP parameter to the assigned RIPper) arranged in said printer controller for storing RIP host data which is data related to the processing performance of each print client member (Mastie, col. 5, lines 56-60, RIP parameter field 26, indicates various RIP

parameters which is how the PDL should be process by the printer controllers); and an RIP host selection function part for selecting one of said plurality of print client members which has the highest processing performance while referring to the RIP host data when the amount of accumulation of said PDL data waiting for raster image processing becomes equal to or greater than a prescribed threshold (Schwartz, col. 8, lines 39-41, there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host), and for instructing the print client member thus selected in such a manner that raster image processing of said PDL data is carried out by said selected print client member while using its own RIP function part (Vatland, fig. 4, computer system 72, the PDL is rasterized using RIP 136).

Regarding claim 8, the combination of Vatland, Mastie and Schwartz discloses the distributed printing system as set forth in claim 6, characterized in that RIP execution permission means is provided in said RIP function part arranged in each print client member in such a manner that the user can preset whether an instruction of raster image processing from said printer controller is acceptable (Vatland, col. 10, lines 41-42, the server must select a RIP client capable of accepting a print job).

Regarding claim 9, the combination of Vatland, Mastie and Schwartz discloses the printing system as set forth in claim 8, characterized in that a plurality of print client members are arranged as said print client (Vatland, fig. 4, computer system 70 and 72); and said RIP host selection control means comprises: an RIP host data part arranged in said printer controller (Mastie, printer manager 6, col. 8, lines 40-41, the printer manager transmit the RIP parameter to the assigned RIPper) for storing RIP host data

which is data related to the processing performance of each print client member (Mastie, col. 5, lines 56-60, RIP parameter field 26, indicates various RIP parameters which is how the PDL should be process by the printer controllers); and an RIP host selection function part for selecting those of said plurality of print client members which said RIP execution permission means permits acceptance of an raster image processing instruction from said printer controller when the amount of accumulation of said PDL data waiting for raster image processing becomes equal to or greater than a prescribed threshold, further selecting one of the thus selected print client members which has the highest processing performance while referring to the RIP host data (Schwartz, col. 8, lines 39-41, there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host), and instructing the print client member thus selected in such a manner that raster image processing of said PDL data is carried out by said selected print client member while using its own RIP function part (Vatland, fig. 4, computer system 72, the PDL is rasterized using RIP 136).

Regarding claim 10, the combination of Vatland and Mastie discloses the printing system as set forth in claim 1, characterized in that said RIP distribution control means comprises: RIP function parts arranged in said printer controller and said print client (Vatland, fig. 4, RIP 136 and RIP 148 in computer system 72 and print server 82, respectively).

The combination does not disclose expressly a PDL analysis function part arranged in said print client for extracting PDL feature data corresponding to an amount

of raster image processing of the PDL data; and RIP host selection control means arranged in said printer controller for determining, upon receipt of a notification of transmission of PDL data from said print client, based on the PDL feature data from said PDL analysis function part whether the amount of accumulation of PDL data waiting for raster image processing when the PDL data to be transmitted from said print client is received becomes equal to or greater than a prescribed threshold, and for issuing an instruction such that said print client performs raster image processing of said PDL data by using its own RIP function part when the amount of accumulation of PDL data waiting for raster image processing becomes equal to or greater than said threshold.

Schwartz discloses a print driver that can perform analysis on the PDL. For example if (a) the size of the PDL output is larger than it would be to send a fully rasterized page image, and (b) there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host (col. 8, lines 39-41). Furthermore, the data is pre-scanned by the driver. The driver then applies metrics and algorithms to estimates the processing required to convert PDL to RIP, if the amount of data at any stage exceeds the available storage on one side or the other then print quality is degraded (col. 7, lines 1-10). Therefore, if it host does not have the available storage to hold the rasterized data then the client have to process PDL into rasterize data.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the combination of Vatland and Mastie teaching in view of Schwartz because of the following reason: by using a print driver to do analysis on the

PDL will result in the shortest print time if the rasterization is done in neither the client or the host based on processing speed, resources available, and transfer rate (col. 8, lines 42-47).

Regarding claim 11, the combination of Vatland, Mastie and Schwartz discloses the printing system as set forth in claim 10, characterized in that the PDL feature data extracted by said PDL analysis function part comprises the number of pages of the PDL data (Mastie, fig. 2 illustrates how a PDL should be RIPed that is it contains a parameter field 26 indicating various RIP parameters for generating the RIPed files, including fonts, resolution, image compression type and page segment, col. 5, lines 57-60).

Regarding claim 12, the combination of Vatland, Mastie and Schwartz discloses the distributed printing system as set forth in claim 10, characterized in that a plurality of print client members are arranged as said print client (Vatland, fig. 4, computer system 70 and 72); and said RIP host selection control means comprises: an RIP host data part (Mastie, printer manager 6, col. 8, lines 40-41, the printer manager transmit the RIP parameter to the assigned RIPper) arranged in said printer controller for storing RIP host data which is data related to the processing performance of each print client member (Mastie, col. 5, lines 56-60, RIP parameter field 26, indicates various RIP parameters which is how the PDL should be process by the printer controllers); and an RIP host selection function part for selecting one of said plurality of print client members which has the highest processing performance while referring to the RIP host data when the amount of accumulation of said PDL data waiting for raster image processing becomes equal to or greater than a prescribed threshold (Schwartz, col. 8, lines 39-41,

there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host), and for instructing the print client member thus selected in such a manner that raster image processing of said PDL data is carried out by said selected print client member while using its own RIP function part (Vatland, fig. 4, computer system 72, the PDL is rasterized using RIP 136).

Regarding claim 13, the combination of Vatland and Mastie discloses the printing system as set forth in claim 1, characterized in that said RIP distribution control means comprises: RIP function parts arranged in said printer controller and said print client (Vatland, fig. 4, RIP 136 and RIP 148 in computer system 72 and print server 82, respectively).

The combination does not disclose expressly a PDL analysis function part arranged in said print client for extracting PDL feature data corresponding to an amount of raster image processing of the PDL data; and RIP host selection control means arranged in said printer controller for determining, upon receipt of a notification of transmission of PDL data from said print client, based on the PDL feature data from said PDL analysis function part whether the amount of accumulation of PDL data waiting for raster image processing when the PDL data to be transmitted from said print client is received becomes equal to or greater than a prescribed threshold, and for issuing an instruction such that said print client performs raster image processing of said PDL data by using its own RIP function part when the amount of accumulation of PDL data waiting for raster image processing becomes equal to or greater than said threshold.

Schwartz discloses a print driver that can perform analysis on the PDL. For example if (a) the size of the PDL output is larger than it would be to send a fully rasterized page image, and (b) there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host (col. 8, lines 39-41). Furthermore, the data is pre-scanned by the driver. The driver then applies metrics and algorithms to estimates the processing required to convert PDL to RIP, if the amount of data at any stage exceeds the available storage on one side or the other then print quality is degraded (col. 7, lines 1-10). Therefore, if it host does not have the available storage to hold the rasterized data then the client have to process PDL into rasterize data.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the combination of Vatland and Mastie teaching in view of Schwartz because of the following reason: by using a print driver to do analysis on the PDL will result in the shortest print time if the rasterization is done in neither the client or the host based on processing speed, resources available, and transfer rate (col. 8, lines 42-47).

Regarding claim 14, the combination of Vatland, Mastie and Schwartz discloses the distributed printing system as set forth in claim 13, characterized in that a plurality of print client members are arranged as said print client (Vatland, fig. 4, computer system 70 and 72); and said RIP host selection control means comprises: an RIP host data part arranged in said printer controller (Mastie, printer manager 6, col. 8, lines 40-41, the printer manager transmit the RIP parameter to the assigned RIPper) for storing RIP host

data which is data related to the processing performance of each print client member (Mastie, col. 5, lines 56-60, RIP parameter field 26, indicates various RIP parameters which is how the PDL should be process by the printer controllers); and an RIP host selection function part for selecting one of said plurality of print client members which has the highest processing performance while referring to the RIP host data when the amount of accumulation of said PDL data waiting for raster image processing becomes equal to or greater than a prescribed threshold (Schwartz, col. 8, lines 39-41, there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host), and for instructing the print client member thus selected in such a manner that raster image processing of said PDL data is carried out by said selected print client member while using its own RIP function part (Vatland, fig. 4, computer system 72, the PDL is rasterized using RIP 136).

Regarding claim 15, the combination of Vatland and Mastie discloses the distributed printing system as set forth in claim 1, characterized characterized in that said RIP distribution control means (fig. 1, printer manage 6) distributes the raster image processing based on an amount of accumulation of the PDL data waiting for the raster image processing (Mastie, fig. 4 is a GUI that shows the user the PDL that is accumulated in the print manager queue and which PDL is being RIP and which PDL is waiting to be RIP).

The combination does not disclose expressly a PDL analysis function part arranged in said print client for extracting PDL feature data corresponding to an amount of raster image processing of the PDL data, and a notification function part having a

function of downloading control data from said printer controller; and RIP host selection control means arranged in said printer controller for determining, upon receipt of a notification of transmission of PDL data from an RIP module storing a control program for raster image processing and from said print client, based on the PDL feature data extracted by said PDL analysis function part whether an amount of accumulation of PDL data waiting for raster image processing when the PDL data to be transmitted is received becomes equal to or greater than a prescribed threshold, and for sending control data of said RIP module to said print client when the amount of accumulation of PDL data waiting for raster image processing becomes equal to or greater than said threshold, and issuing an instruction such that said print client performs raster image processing of said PDL data by using the control data received by said print client.

Schwartz discloses a print driver that can perform analysis on the PDL. For example if (a) the size of the PDL output is larger than it would be to send a fully rasterized page image, and (b) there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host (col. 8, lines 39-41). Furthermore, the data is pre-scanned by the driver. The driver then applies metrics and algorithms to estimates the processing required to convert PDL to RIP, if the amount of data at any stage exceeds the available storage on one side or the other then print quality is degraded (col. 7, lines 1-10). Therefore, if it host does not have the available storage to hold the rasterized data then the client have to process PDL into rasterize data.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the combination of Vatland and Mastie teaching in view of Schwartz because of the following reason: by using a print driver to do analysis on the PDL will result in the shortest print time if the rasterization is done in neither the client or the host based on processing speed, resources available, and transfer rate (col. 8, lines 42-47).

Regarding claim 16, the combination of Vatland, Mastie and Schwartz discloses the distributed printing system as set forth in claim 15, characterized in that a plurality of print client members are arranged as said print client; and said printer controller selects one of said plurality of print client members which has the highest processing (Schwartz, col. 8, lines 39-41, there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host) performance while referring to the RIP host data when the amount of accumulation of said PDL data waiting for raster image processing becomes equal to or greater than a prescribed threshold, and makes said notification function part of the print client member thus selected download a control program for raster image processing sent from said RIP module (Vatland, col. 10, lines 41-42, the server select a RIP client to which data will be transmitted--therefore the client have to download the RIP data).

Regarding claim 17, the combination of Vatland, Mastie and Schwartz discloses the distributed printing system as set forth in claim 7, characterized in that a host data collection part for collecting RIP host data of each print client member and transmitting the RIP host data thus collected to the RIP host data part at appropriate times is

arranged in each print client member (Mastie, col. 8, lines 9-13, the printer manager 6 processing the RIPper table to determine if any enable RIPpers are in a READY state. If so then the PDL is sent to that RIPper).

Regarding claim 18, Vatland discloses a distributed printing method comprising: a PDL data creation step for creating PDL data in a print client based on a print request of a user (fig. 4, PDL generation 98, is used to create PDL data); a raster image processing step for acquiring raster data by performing raster image processing of the distributed PDL data in said print client or said printer controller (fig. 4, raster image processing can be done at the computer system 72 using RIP 136, or at the print server 82 using the RIP 148); and a printing step for delivering the raster data acquired through the raster image processing to a printer engine to print the raster data (fig. 4, network 68 is used to send the rasterized data to be printed at the printer 76, 78, or 122).

Vatland does not expressly disclose a distribution step for distributing said PDL data to said print client and a printer controller.

Mastie discloses a printer manager having a print queue for distributing PDL to printer controllers for converting the PDL into RIP (see fig. 1). Also, when it is determine that a printer controller is available for converting a PDL into RIP the PDL is sent to that available printer controller from the print queue (col. 8, lines 19-20).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Vatland teaching as per teachings of Mastie because of the following reason: by having a print manage with a print queue for holding PDL to be distributed to an available printer controllers (any device that can convert PDL to RIP

i.e. print controller or client) would help optimize RIPper utilization thereby speeding up print time (col. 8, lines 26-27).

Regarding claim 19, the combination of Vatland and Mastie discloses the distributed printing method as set forth in claim 18, characterized in that in said distribution step, the raster image processing is distributed based on an amount of accumulation of the PDL data waiting for raster image processing Mastie, fig. 4 is a GUI that shows the user the PDL that is accumulated in the print manager queue and which PDL is being RIP and which PDL is waiting to be RIP).

Regarding claim 20, the combination of Vatland and Mastie the distributed printing method as set forth in claim 19, characterized in that the amount of accumulation of said PDL data is determined based on PDL feature data corresponding to an amount of raster image processing of the PDL data (Mastie, fig. 2 illustrates how a PDL should be RIPed that is it contains a parameter field 26 indicating various RIP parameters for generating the RIPed files, including fonts, resolution, image compression type and page segment, col. 5, lines 57-60).

Regarding claim 21, the combination of Vatland and Mastie discloses the distributed printing method as set forth in claim 18, characterized in that in said distribution step, the raster image processing is distributed based on RIP host data which is data related to the processing performance of said print client (Mastie, col. 6, lines 29-31, the enabled filed 32 allows the user to specify how much of the printer controller processing cycles are dedicated to RIPping operation).

Regarding claim 22, the combination of Vatland and Mastie disclose the distributed printing method as set forth in claim 21, characterized in that said processing performance includes at least one of a raster image processing speed (Mastie, col. 6, lines 29-38, the enabled filed 32 allows the user to specify how much of the printer controller processing cycles are dedicated to RIPping operation or alternatively to maximize RIP processing the user enable RIPPer use maximize all processor cycles), a memory capacity, and a data transmission time.

Regarding claim 23, the combination of Vatland and Mastie disclose the distributed printing method as set forth in claim 18, where printer manager 6 distributed PDL job to be rasterize by distributing it to an available RIPper (see fig. 1, Mastie). Also, RIP can be done at client system or host system (see fig. 4, Vatland).

The combination does not disclose expressly a determination step for determining, upon receipt of a notification of transmission of PDL data from said print client, in said print controller whether an amount of accumulation of the PDL data waiting for raster image processing when the PDL data to be transmitted is received becomes equal to or greater than a prescribed threshold; and an RIP host selection step for issuing an instruction such that said print client performs raster image processing of said PDL data by using its own RIP function part when the amount of accumulation of the PDL data becomes equal to or greater than said threshold.

Schwartz discloses a print driver that can perform analysis on the PDL. For example if (a) the size of the PDL output is larger than it would be to send a fully rasterized page image, and (b) there is a faster processor and more RAM in the host

than in the printer, then the driver would choose to rasterize in the host (col. 8, lines 39-41).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the combination of Vatland and Mastie teaching in view of Schwartz because of the following reason: by using a print driver to do analysis on the PDL to see the trade off for rasterizing the PDL at the client or the host would reduce print time because it would reduce the amount of data to be transferred and it would utilize the fastest processor to do the rasterization (col. 8, lines 42-47).

Regarding claim 24, the combination of Vatland, Mastie and Schwartz discloses the distributed printing method as set forth in claim 23, characterized in that in said RIP host selection step, one of a plurality of print client members which has the highest processing performance is selected (Schwartz, col. 8, lines 39-41, there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host), and an instruction is issued to the print client member thus selected in such a manner that raster image processing of said PDL data is carried out by said selected print client member while using its own RIP function part (Vatland, fig. 4, computer system 72, the PDL is rasterized using RIP 136)..

Regarding claim 25, the combination of Vatland, Mastie and Schwartz discloses the distributed printing method as set forth in claim 23, characterized in that an RIP execution permission step is provided in each print client member in such a manner that the user can preset whether an raster image processing instruction from said printer

controller is acceptable (Vatland, col. 10, lines 41-42, the server must select a RIP client capable of accepting a print job).

Regarding claim 25, the combination of Vatland, Mastie and Schwartz discloses the distributed printing method as set forth in claim 25, characterized in that said RIP host selection step comprises: a step for selecting those of said plurality of print client members which are permitted to accept an raster image processing instruction from said printer controller in the RIP execution permission step (Mastie, printer manager 6, col. 8, lines 40-41, the printer manager transmit the RIP parameter to the assigned RIPper); a step for referring to RIP host data for the print client members thus selected (Mastie, col. 5, lines 56-60, RIP parameter field 26, indicates various RIP parameters which is how the PDL should be process by the printer controllers); and a step for further selecting one of the selected print client members which has the highest processing performance (Schwartz, col. 8, lines 39-41, there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host); wherein an instruction is given to the selected print client member such that the PDL data is subjected to raster image processing by using its own RIP function part (Vatland, fig. 4, computer system 72, the PDL is rasterized using RIP 136).

Regarding claim 27, the combination of Vatland and Mastie disclose the distributed printing method as set forth in claim 18, where printer manager 6 distributed PDL job to be rasterize by distributing it to an available RIPper (see fig. 1, Mastie). Also, RIP can be done at client system or host system (see fig. 4, Vatland).

The combination does not expressly disclose a step for extracting PDL feature data corresponding to an amount of raster image processing of the PDL data; a determination step for determining, upon receipt of a notification of transmission of PDL data from said print client to said print controller, based on the PDL feature data whether an amount of accumulation of the PDL data waiting for raster image processing when the PDL data to be transmitted is received becomes equal to or greater than a prescribed threshold; and an RIP host selection step for issuing an instruction such that said print client performs raster image processing of the PDL data by using its own RIP function part when the amount of accumulation of the PDL data becomes equal to or greater than said threshold.

Schwartz discloses a print driver that can perform analysis on the PDL. For example if (a) the size of the PDL output is larger than it would be to send a fully rasterized page image, and (b) there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host (col. 8, lines 39-41). Furthermore, the data is pre-scanned by the driver. The driver then applies metrics and algorithms to estimates the processing required to convert PDL to RIP, if the amount of data at any stage exceeds the available storage on one side or the other then print quality is degraded (col. 7, lines 1-10). Therefore, if it host does not have the available storage to hold the rasterized data then the client have to process PDL into rasterize data.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the combination of Vatland and Mastie teaching in view of

Schwartz because of the following reason: by using a print driver to do analysis on the PDL will result in the shortest print time if the rasterization is done in neither the client or the host based on processing speed, resources available, and transfer rate (col. 8, lines 42-47).

Regarding claim 28, the combination of Vatland, Mastie and Schwartz discloses the distributed printing method as set forth in claim 27, characterized in that said step for extracting PDL feature data is performed on a print client side (Schwartz, col. 6, lines 65-67, the PDL is pre-scanned by the driver to determined the complexity of the data using metrics and algorithms, which is on the client side).

Regarding claim 29, the combination of Vatland, Mastie and Schwartz discloses the distributed printing method as set forth in claim 27, characterized in that said step for extracting PDL feature data is performed on a printer controller side (Mastie, col. 5, lines 41-55, the printer manage 6 has to extract the print job data structure 20 submitted by the client so that it knows how to send the job to the appropriate Rippers).

Regarding claim 30, the combination of Vatland, Mastie and Schwartz discloses the distributed printing method as set forth in claim 27, characterized in that said PDL feature data comprises the number of pages of the PDL data (Mastie, fig. 4, queue position 0000004 shows the amount of pages need to be RIP from PDL).

Regarding claim 31, the combination of Vatland, Mastie and Schwartz discloses the distributed printing method as set forth in claim 27, characterized in that in said RIP host selection step, when there are a plurality of print client members, one of the plurality of print client members having the highest processing performance (Schwartz,

col. 8, lines 39-41, there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host) is selected, and an instruction is given to the selected print client member so that said PDL data is subjected to raster image processing by using its own RIP function part (Vatland, fig. 4, shows that the RIPping can be done at the host or the client by using its own RIP).

Regarding claim 32, the combination of Vatland, Mastie and Schwartz discloses the distributed printing method as set forth in claim 23, characterized in that said RIP host selection step includes a step for transmitting control data of an RIP module from said printer controller to said print client when it is determined that the amount of accumulation of the PDL data becomes equal to or greater than said threshold, and for issuing an instruction such that said print client performs raster image processing of the PDL data by using the control data received (Schwartz, col. 8, lines 39-41, the print driver that can perform analysis on the PDL. For example if (a) the size of the PDL output is larger than it would be to send a fully rasterized page image, and (b) there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host).

Regarding claim 33, the combination of Vatland, Mastie and Schwartz discloses the distributed printing method as set forth in claim 32, characterized in that when said print client comprises a plurality of print client members one of said print client members which has the highest processing performance is selected by referring to RIP host data (Schwartz, col. 8, lines 39-41, there is a faster processor and more RAM in the host than in the printer, then the driver would choose to rasterize in the host).

Regarding claim 34, the combination of Vatland, Mastie and Schwartz discloses the distributed printing method as set forth in claim 23, characterized by comprising a host data collection step for collecting RIP host data of each of print client members and transmitting the RIP host data thus collected to said printer controller at appropriate times (Mastie, col. 8, lines 9-13, the printer manager 6 processing the RIPper table to determine if any enable RIPpers are in a READY state. If so then the PDL is sent to that RIPper).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew H. Lam whose telephone number is (571) 272-8569. The examiner can normally be reached on M-F (9:30-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (571) 272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Moore

DAVID MOORE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600